INCH-POUND
MIL-PRF-23419E
AMENDMENT 3
12 June 1998
SUPERSEDING
AMENDMENT 2
24 January 1996

PERFORMANCE SPECIFICATION

FUSE, CARTRIDGE, INSTRUMENT TYPE, GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-23419E, dated 1 August 1992, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

* Beneficial comments, delete and substitute:

"

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center, Columbus, ATTN: DSCC-VAM, 3990 East Broad Street, Columbus, OH 43213-1199 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

"

PAGE 2

2.1.1, SPECIFICATIONS, FEDERAL, delete and substitute:

"J-C-30 - Cable and Wire, Electrical (Power, Fixed Installation)
"QQ-N-290 - Nickel Plating (Electrodeposited).
"QQ-S-365 - Silver Plating, Electrodeposited: General Requirements for."

2.1.1, SPECIFICATIONS, MILITARY, delete and substitute:

"MIL-T-10727 - Tin Plating; Electrodeposited or Hot-Dipped, for Ferrous and Nonferrous Metals.
"MIL-F-14256 - Flux, Soldering, Liquid (Rosin Base).
"MIL-G-45204 - Gold Plating, Electrodeposited."

2.1.1, STANDARDS, MILITARY, delete and substitute:

"MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
"MIL-STD-790 - Standard Practice for Established Reliability and High Reliability Qualified Products List (QPL) Systems for Electrical, Electronic and Fiber Optic Parts Specifications.
"MIL-STD-1285 - Marking of Electrical and Electronic Parts."

Following 2.1.1, add:

"2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

"NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

"NASA Reference Publication 1124 - Outgassing Data for Selecting Spacecraft Materials.

"(Application for copies should be addressed to the NASA/Electronic Packaging and Processes Branch, NASA Goddard Space Flight Center, Code 312, Greenbelt, MD 20771.)"

PAGE 3

2.2, ASTM standards, delete and substitute:

"AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

"ASTM E595 - Standard Test Method for Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment.

"(Application for copies should be addressed to the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, Conshohocken, PA 19428-2959, Telephone (610) 832-9500, Fax (610) 832-9555.)"

"AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

"ANSI/NCSL Z540-1 - Calibration Laboratories and Measuring and Test Equipment - General Requirements.

"INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

"ISO 10012-1 - Quality assurance requirements for measuring equipment - Part 1: Metrological confirmation system for measuring equipment.

"(Application for copies should be addressed to the American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036-8002, Telephone (212) 642-4900, Fax (212) 302-1286.)"

2.2, "UNDERWRITERS LABORATORIES INC. (UL)" and all corresponding information, delete.

* Following 3.1, add:

"3.1.1 Fuses with ratings not covered by a specification sheet. The requirements of this specification shall apply to fuses with other voltage and current ratings, provided the fuse has the same dimensions and falls within the minimum and maximum current and voltage rating of an existing specification sheet, and conforms to all other requirements of that specification sheet. The qualified products list shall be applicable to these fuses."

PAGE 4

3.4.1 through 3.4.4, delete.

PAGE 5

3.5.5.1, delete and substitute:

"3.5.5.1 Silver plating. Silver plating shall be in accordance with QQ-S-365, or equivalent as approved by the qualifying activity, and shall be 99.9 percent pure silver, not coin silver. It shall be not less than .00008 inch (0.0020 mm) thick. When silver plating is specified (see 1.2.1.5), the letter "S" shall be added as a suffix to the type designation."

3.5.5.2, after "QQ-N-290" add: ", or equivalent as approved by the qualifying activity."

3.5.5.4, delete and substitute:

"3.5.5.4 Tin plating or coating. Tin plating or coating shall conform to MIL-T-10727, or equivalent as approved by the qualifying activity, except the minimum lead content shall be 3 percent. (NOTE: Use of pure tin plating is prohibited as a final finish and as an undercoat effective 6 months from the date of this specification (see 6.8).)"

3.5.5.5, after "MIL-G-45204" add: ", or equivalent as approved by the qualifying activity."

PAGE 6

3.11 through 3.11.2, delete.

3.12, last line, delete and substitute:

"Collected volatile condensable material (CVCM)---Shall not exceed 0.1 percent.

"Materials data listed in the latest revision of the NASA Reference Publication 1124 which meet these TML and CVCM requirements may be substituted in lieu of testing."

PAGE 7

3.20.2 through 3.20.2.4, delete.

PAGE 8

4.1.2, delete and substitute:

"4.1.2 Test equipment and inspection facilities. The manufacturer shall establish and maintain a calibration system in accordance with ANSI/NCSL Z540-1, ISO 10012-1, or equivalent system as approved by the qualifying activity."

4.2a, delete.

4.3, delete.

PAGE 9

TABLE II, delete.

4.5.4b, delete "12-month period" and substitute "36-month period".

PAGE 10

TABLE III, Group II, delete "Maximum clearing current I^2t (when specified)", "Insulation resistance", and all corresponding information.

TABLE III, Group III, after "Short circuit" add:

"Maximum clearing current I^2t (when specified) | 3.10.2 | 4.8.6.2 |"

TABLE III, Groups III, V, and VI, delete "Insulation resistance" and all corresponding information.

PAGE 12

TABLE V, delete.

TABLE VI, delete and substitute:

"TABLE VI. Groups A and B, zero defect sampling plan.

Lot size	Sample size	
	Group A, subgroup 2	Group B
1 to 13	100 percent	5
14 to 50	13	5
51 to 90	13	7
91 to 150	13	11
151 to 280	20	13
281 to 500	29	16
501 to 1,200	34	19
1,201 to 3,200	42	23
3,201 to 10,000	50	29

"

PAGE 13

* TABLE VII, "Terminal strength" add "1/".

* TABLE VII, end of table add:

"1/ If the manufacturer can demonstrate that this test has been performed five consecutive times with zero failures, this test, with approval of the qualifying activity, can be deleted. The manufacturer, however, shall still perform this test as part of the group C inspection test. If the design, material, construction, or processing of the part is changed or, if there are any quality problems, the qualifying activity may require resumption of the specified testing. Deletion of testing does not relieve the manufacturer from meeting the test requirement in case of dispute."

TABLE VII, delete "Insulation resistance" and all corresponding information.

4.7.2.1.1, first line, after "minimum" add, "current"; second line, delete "24 months" and substitute "36 months; third line delete "and after each subsequent 36-month period".

PAGE 14

TABLE VIII, Subgroup 1, delete "Insulation resistance" and all corresponding information; after "Short Circuit" add:

"Maximum clearing current I^2t (when specified) | 3.10.2 | 4.8.6.2 |"

* TABLE VIII, subgroup 2, add "(see 3.1)" after title.

TABLE VIII, Subgroup 2, delete "Maximum clearing current I^2t (when specified)" and "Insulation resistance" and all corresponding information.

TABLE VIII, Subgroup 4, delete "Insulation resistance" and all corresponding information.

PAGE 15

4.8.4, delete and substitute:

"4.8.4 Current-carrying capacity (see 3.8). Unless otherwise specified (see 3.1), fuses shall be subjected to an alternating or direct current of 100 percent of rated current, and shall be mounted in a fuseholder as specified (see 3.1).

"For qualification inspection (group I), the samples shall be apportioned and submitted to the test at -55°C to -60°C, at +20°C to +35°C (room ambient temperature), and at the maximum rated temperature for the fuse (see 3.1). The tolerance at the maximum rated temperature shall be -0°C and +5°C.

"For group B, the inspection shall be done only at +20°C to +35°C (room ambient temperature). The test current shall be as specified (see 3.1). The current shall be maintained for 30 minutes after the temperature of each fuse has stabilized, but shall be applied for not less than 1.5 hours. It may be assumed that the temperature has stabilized when three consecutive temperature readings taken at 10-minute intervals show no rise in temperature.

"When two or more fuses are tested in series, the fuseholders shall be located so that there will be a spacing, as specified in table IX, between any two fuses under test. The wire connecting the fuseholders together and connecting the fuseholders to the ammeter and the source of supply shall be as specified in table IX, (unless otherwise specified), and shall be in accordance with J-C-30. The length of wire between fuseholders shall be as specified in table IX. The temperature of the fuse case or body and of the terminals shall be measured by thermocouples (wire size 28 to 32 AWG)."

* TABLE IX, delete and substitute:

"TABLE IX. Current-carrying capacity test set-up.

Fuse current rating	Spacing (mm)	Wire size	Length (mm)
> 15 amperes	> 6 inches (152.4) (unless otherwise specified)	8 AWG	2 feet (609.6)
≤ 15 amperes	> 1 inch (25.4)	14 AWG	6 inches (152.4)

"

PAGE 16

4.8.7, delete.

4.8.6.1, last sentence, delete.

4.8.6.3, last sentence, delete.

PAGE 18

5. through 5.4.2 inclusive, delete and substitute:

"5. PACKAGING

"5.1 Packaging. The requirements for packaging shall be in accordance with the contract or purchase order (see 6.2)."

PAGE 20

6.2d through 6.2f, delete and substitute:

"d. Requirements for packaging (see 5.1).

"e. Special marking, if required (see 5.1)."

* 6.3, last sentence, delete and substitute: "The activity responsible for the Qualified Products List is Defense Supply Center, Columbus, DSCC-VQP, 3990 East Broad Street, Columbus, Ohio, 43213, phone (614) 692-0504".

PAGE 21

Following 6.8, add:

"6.9. Tin plated finishes. Tin plating is prohibited (see 3.5.5.4) since it may result in tin whisker growth. Tin whisker growth could adversely affect the operation of electronic equipment systems. For additional information on this matter, refer to ASTM B545 (Standard Specification for Electrodeposited Coating of Tin)."

The margins of this amendment are marked with an asterisk to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Custodians:
Army - CR
Navy - EC
Air Force - 85

Review activities:
Army - AR, CR4, MI
Navy - OS, SH
Air Force - 19
NSA - NS

Preparing activity:
DLA - CC

(Project 5920-0556)